

FATALITY UPDATE

A Safety Alert for the Mining Industry From
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and Health Administration

While headlines focus on the disaster at West Virginia's Upper Big Branch (UBB) Mine that killed 29 miners, we cannot lose sight of the fact that other miners are losing their lives at mines around the country. To date, 28 other miners from all sectors of mining have died in fatal accidents since January 1, 2010. We must take action to prevent additional fatalities.

Eight miners are dead because they were **struck-by** moving or falling objects. **Roof falls and rib rolls** crushed 7 miners. Six miners were killed working in **close proximity** to mining or haulage equipment. Three more miners lost their lives in **explosions and fires**; another miner was killed when he was caught inside rotating machinery; a contract miner fell to his death, a contract truck driver was killed when his truck went through a berm and over a highwall, and a miner drowned. Eight of the dead miners were **contractors**. Each life lost is a tragedy for a family, a mining operation, and a community.

Fatalities can be prevented. They are not inevitable in mining. Effective safety and health management programs save lives. Workplace examinations for hazards – pre-shift and on-shift **every shift** – can identify and eliminate hazards that kill and injure miners. And effective and appropriate training will ensure that miners recognize and understand hazards and how to control or eliminate them.

While some of the specific circumstances of these accidents remain under investigation, here is what we do know at this time:

Eight miners have died to date when they were struck by moving or falling objects.

- A miner on the surface of an underground coal mine was killed when a 1-ton truck (mantrip) he was repairing lurched off the jack stands when a co-worker started it and struck him.
- A contractor was killed at a copper mine when a pipe that was not securely attached fell on him, knocking him to the ground.
- A contract truck driver was killed on the surface at an underground salt mine when a 150-ton salt bin under which he was loading his truck collapsed onto the truck's cab.

- A contract iron worker/ mine fireboss was killed on the surface at an underground coal mine when he was struck and pinned by a stair stringer that fell while it was being lifted by a crane.
- A contract driller at a crushed stone operation died when he was struck by a truck-mounted drill as he repositioned it.
- A miner was killed at surface copper operation when a 240-ton haul truck pulled forward and struck a half-ton pickup that had parked in front of it.
- Two gold miners working from a suspended platform in an underground mine ventilation shaft were killed when they were struck by pipe and aggregate materials that fell from above.

These deaths could have been prevented by following well-known precautions:

- Locking, blocking and chocking equipment to prevent unintended motion.
- Staying clear of suspended loads and persons working above and out of the path of parts, equipment, tools or materials that can move suddenly or quickly.
- Sounding alarms and horns before starting or moving equipment, staying clear of mobile equipment and communicating miners' locations.
- Inspecting and maintaining buildings and equipment for structural integrity and operational reliability. Routinely examining metal structures for indications of weakened structural components (corrosion, fatigue cracks, bent/buckling beams, braces or columns, damaged/loose/missing connectors, broken welds, etc.).
- Ensuring miners are in a safe position when objects or materials can fall from above, and conducting a risk analysis before attempting to correct blockages of material.

([click here](#) for a printable safety alert poster on struck-by fatalities in metal and nonmetal mines)

Seven miners have been killed by roof falls or rib rolls to date.

- A rib roll killed a continuous miner operator in an underground coal mine when the rib struck him and pinned him against the mine floor.
- Two miners were killed when an underground coal mine roof collapsed while they were loading rock out of completed extended cut.
- An underground coal miner was killed when a section of a rib fell and knocked over a roof jack that struck the miner.
- A roof bolter operator in a continuous mining machine was killed when a portion of a rib sheared off while he cut an overcast, pinning him against the machine.
- A contract miner was killed at an underground uranium mine when he was struck by falling material while he was scaling a rib.
- A contract miner was killed at an underground silver mine when falling material struck him while he was scaling loose ground in a stope.

Lives lost through ground control accidents (roof falls, rib rolls and other ground control issues) could be saved by normal, good mining practices:

- Performing thorough examination and testing of the roof and ribs pre-shift and on-shift, performing examinations after blasting, and whenever changing conditions warrant.
- Scaling only from a safe location.
- Never working or traveling under unsupported roof, and staying clear of the tops and toes of highwalls and stockpiles.

([click here](#) for a printable safety alert poster on roof and rib accidents in coal mines)

([click here](#) for a printable safety alert poster on falls of ground in metal and nonmetal mines)

Six miners working in close proximity to mining and haulage equipment have died to date:

- A continuous mining machine operator was crushed between the conveyor boom of the continuous mining machine and the coal rib while positioning the machine in an underground coal mine.
- A miner standing between the front and rear trailers of an over-the-road tandem trailer truck at a surface cement plant was killed when the truck pulled forward.
- A coal miner was pinned between a shuttle car and a coal rib as he stood in the outside turn radius of the shuttle car as it turned into the last open crosscut in an underground mine.
- An underground coal miner was crushed between a rib and the continuous mining machine he was operating.
- A section electrician was struck and killed by a shuttle car in an underground coal mine.
- A foreman was struck and killed by a battery-powered ram car in an underground coal mine.

Crushing injuries can and should be prevented by staying well clear of powered mining and haulage equipment, including shuttle cars, scoops, and continuous mining machines.

- Mine operators should assess risk of location where miners work in confined spaces to determine optimum locations to prevent crushing injuries.
- Miners should never place themselves between powered equipment and the rib when the equipment is in operation.
- Proximity detection/protection systems can save lives and should be installed on powered mining equipment where these crushing injuries can be prevented. Some mines are already doing this voluntarily.
- Backup alarms and horns should be functioning.

([click here](#) for a printable safety alert poster on accidents involving mobile face equipment)

([click here](#) for a printable safety alert poster on accidents involving powered haulage at metal and nonmetal mines)

Three miners were killed in explosions and fires.

- A miner was killed at a cement operation when the damaged drill steel he was cutting with an oxy-acetylene torch exploded.
- A supervisor was killed at an underground gold mine when he entered a blast area and a misfire detonated without warning.
- A truck operator was killed at a surface coal mine when an ignition/explosion erupted into a fire while he was refueling a diesel track-mounted highwall drill.

Injuries and deaths from explosions and fires can be prevented:

- Ensure that flammable, combustible or explosive materials are not present before applying heat, cutting or welding.
- Always examine materials with hollow spaces or cavities to ensure gases can vent before applying heat. Never apply heat to materials where pressure build up is possible.
- Follow manufacturers' guidelines for storage and usage of explosives. Keep explosives storage areas clean, dry and orderly. Properly rotate explosive stock to use oldest stock first. Never use damaged/deteriorated/outdated explosives, initiation devices, or blasting agents.
- Wait the required minimum time before entering the blast area when either a misfire or burning explosives is a possibility.
- Ventilate refueling areas well, especially in low areas where heavy fuel vapors can accumulate. Before refueling, turn off the engine(s) and motor(s) and eliminate other potential ignition sources. Check hydraulic lines and connections, especially those near hot surfaces, prior to operating the vehicle. Perform maintenance or repairs when necessary. Ensure that all affected persons are familiar with the Material Safety Data Sheets on fuels and lubricants in use.

Contractors represent a disproportionate number of these deaths. Mine operators should ensure that contractors have an effective health and safety management program and ensure that contractors have received effective training. Contractors and operators should coordinate operations at the mine to ensure that safety and health management programs are in place and are effective, all workplace examinations are performed, and safe work procedures are followed.

Printable posters addressing the common causes of these fatalities can be found on the Alerts/Hazards section of MSHA's website, www.msha.gov.

Violations of the priority standards identified earlier this year as **Rules to Live By** continue to play key roles in mine fatalities. While not all of the fatality investigations have been completed, not all of the violations have been identified and not all of the

associated citations and orders have been issued, it currently appears that violations of the Rules to Live By standards were still involved in more than half of those fatalities. MSHA's inspectors will be especially mindful of these issues while performing inspections. They will be talking to miners and mine supervisors in mines throughout the country to discuss these kinds of fatalities, and the ways to prevent them.

The importance and value of effective safety and health management programs cannot be overstated. A thorough, systematic review of all tasks and equipment to identify hazards is the foundation of a well-designed safety and health management program. Modify equipment, processes, work procedures and management systems to eliminate or control identified hazards. Operators and contractors should create effective safety and health management programs, ensure that they are implemented, and periodically review, evaluate, and update them. If an accident or near miss does occur, find out why and act to prevent recurrence. If changes to equipment, materials or work processes introduce new risks into the mine environment, they must be addressed immediately.

Conducting workplace examinations before beginning a shift and during a shift – every shift – can prevent deaths by finding and fixing safety and health hazards. All required workplace examinations must be performed and identified problems resolved to protect workers.

Providing effective and appropriate training to miners is a key element in ensuring the safety and health of miners. Mine operators and Part 46 and Part 48 trainers need to train miners and mine supervisors on the conditions that lead to deaths and injuries and measures to prevent them.

Miners deserve a safe and healthy workplace and the right to go home safe and well at the end of every shift, every day. We must all work together to make that happen.



FALLS OF GROUND CAN BE DEADLY!



6 MNM miners killed by falls of ground since 2008 :

- A miner scaling a rib was killed by falling material approximately 11' high by 15' wide by 30" thick.
- A miner scaling loose ground in a stope was killed when he was struck by material approximately 3' long by 2' wide by 2' thick.
- A miner cleaning equipment was killed by a large roof fall.
- A miner performing maintenance on a roof bolter was killed by a fall of cemented backfill.
- A miner attempting to retrieve a bit from a jackleg drill he was using to drill a hole near the face died when a piece of rock approximately 8.5' by 4' by 14" fell from the roof and struck him.
- A miner in the cab of a track mounted excavator with a scaling attachment died when a piece of rock 13' wide by 26' long by 4 ½' thick fell from the back.

Best Practices

- Examine, sound, and test for loose ground in areas before starting to work, after blasting, and as ground conditions warrant.
- Always scale from a safe location.
- Mine operators should have all work areas examined for conditions that may harm miners.

Contractors (MNM)

CY2010 - 55% of Fatalities (7/1/2010)

CY2009 - 44% of Fatalities



1. A contract miner died when a pipe that was not securely attached fell on him, knocking him to the ground and falling on top of him.
2. A contract miner died when a 150 ton salt bin collapsed on the cab of his truck as his truck was being loaded.
3. A contract miner died when he tried to stop a drill he was operating from rolling down the grade.
4. A contract miner was killed by falling materials while he was scaling a rib.
5. A contract miner died after falling 45 feet to the ground over a handrail while using a ladder to access a duct that was above the handrail.
6. A contract miner was killed by a piece of rock while he was scaling loose ground.

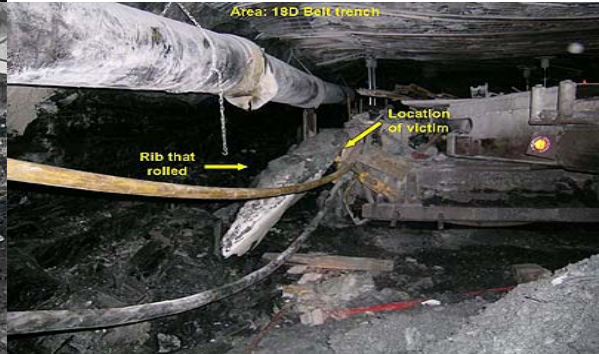
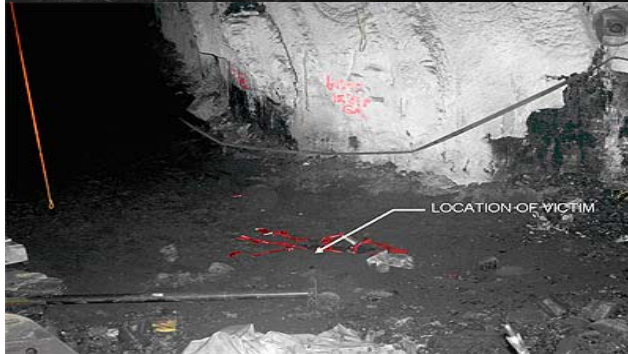
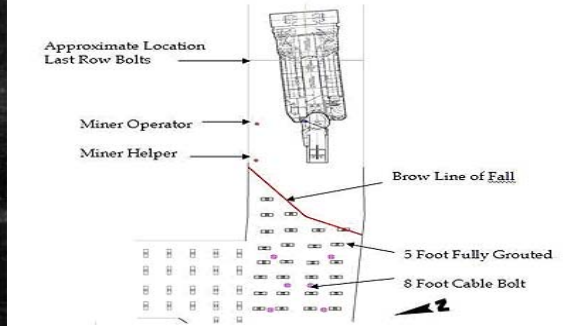
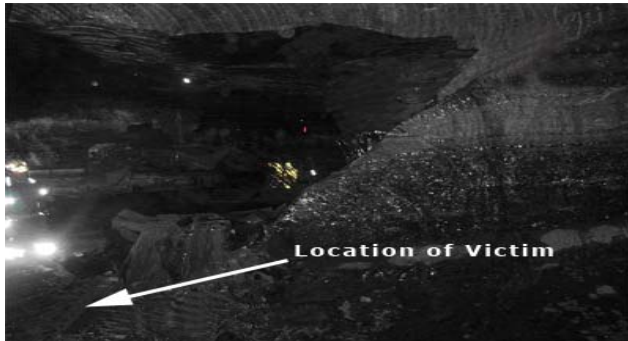
Best Practices

- Operators should ensure that contractors have an effective health and safety management program.
- Ensure that contractors have received effective training.
- Screen contractors and hire those with safe track records.
- Contractors and operators should coordinate to ensure safety and health management programs are in place, are effective, and safe work procedures are followed.
- Mine operators should have all work areas examined for conditions that may harm miners.

Always Take Time for Safety
Remember: A Safe Workplace is No Accident!

ROOF AND RIBS – STAY ALERT!

ROOF and RIB ACCIDENTS IN COAL MINES CLAIM 5 LIVES YTD IN 2010



1. A continuous miner operator was struck and killed when by a coal rib while using a remote control continuous mining machine to clean a previously bolted crosscut.
2. A continuous miner operator and a helper were killed when the mine roof collapsed while they were loading rock out of a completed extended cut.
3. A miner was installing a rib support when a section of rib fell and knocked over a roof jack that struck and killed him.
4. A left side integral roof bolter operator on a continuous mining machine was struck and killed by a portion of rib that fell and pinned him against the machine.

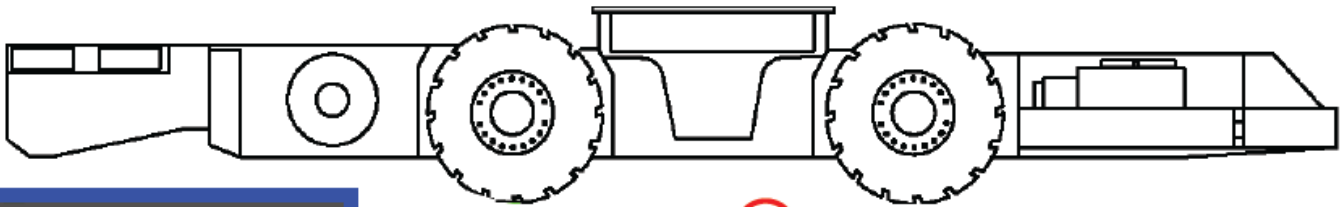
Best Practices

- Ensure everyone is trained in hazards associated with roof and rib failures.
- Conduct thorough pre-shift examinations and on-shift examinations before beginning work or travel and frequently thereafter as conditions warrant.
- Take extra precautions when working between equipment and ribs.
- Adequately support, control, or scale roof and ribs before beginning work and scale from a safe location.
- Be alert to changing conditions which may affect roof and rib conditions.
- Assure that the roof control plan is suitable for prevailing conditions.
- Mine operators should have all work areas examined for conditions that may harm miners.

**Avoid
CLOSE**

PROXIMITY

to MOVING Mobile Face Equipment !



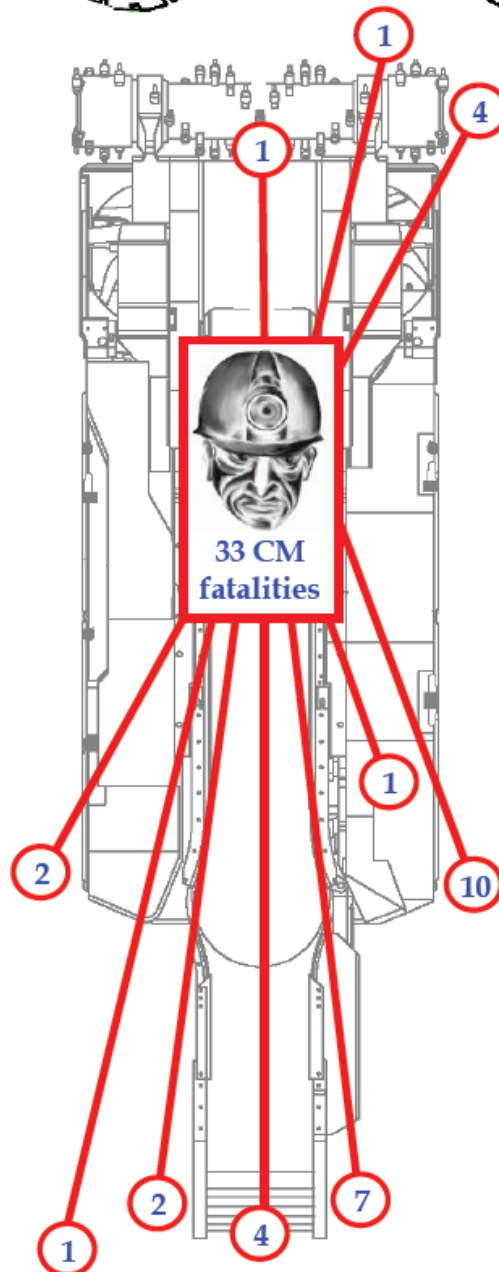
On June 24, 2010, a continuous mining machine (CM) operator was killed when he was caught between the right rib and the remote control CM he was operating.

On July 1, 2010, a 60-year old section electrician was killed when he was struck by a shuttle car.

On July 9, 2010, a foreman was killed when he was struck by a battery powered ram car.

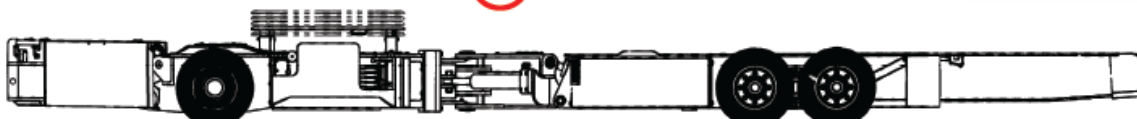
Since 1984, 33 miners have been killed in crushing accidents associated with the operation of remote control CMs.

Since 1995, 22 miners have been killed after being struck by other types of moving mobile face equipment.



BEST PRACTICES

- ▶ Install Proximity Detection Systems on CMs and other face equipment. Find approved systems at msha.gov.
- ▶ Avoid "Red Zone" areas. See diagram at msha.gov.
- ▶ Use remote control units that have safeguards against accidental tram.
- ▶ Before tramming, ensure emergency stop and operational controls are functional.
- ▶ De-energize machine before servicing or setting bits.
- ▶ De-energize pump motor before checking methane, extending ventilation devices, or positioning trailing cables.
- ▶ Ensure equipment is properly maintained and being operated safely, especially in low mining heights, and slippery and uneven floor conditions.



STOP STRUCK-BY FATALITIES: PAY ATTENTION AROUND MOBILE EQUIPMENT!



5 MNM Struck By Fatalities Since 2008

- A miner in a half-ton pickup parked in front of a parked 240-ton haul truck died when the haul truck pulled forward.
- A miner standing between the front and rear trailers of an over-the-road tandem trailer truck died when the truck pulled forward.
- A delivery person died when she walked behind a front-end loader that backed over her.
- A miner drilling in a pit exited the drill and was walking in the drill area when he was struck and killed by a flatbed truck as it backed up.
- A miner checking the roof and ribs for scaling was struck and killed by a front-end loader as it backed up.

Best Practices

- Sound alarms and horns before moving equipment.
- Train all persons to stay clear of mobile equipment
- Always make sure equipment operators see you before entering any area where mobile equipment is operated.
- Mine operators should have all work areas examined for conditions that may harm miners.